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2. (Amended) A catalyst for oxidizing a reformed gas according to claim 1, wherein the alloy element of the platinum alloy is any of ruthenium, iron, rhodium, cobalt, molybdenum, nickel, or manganese.

### REMARKS

Claims 1 and 2 are pending in this application. Claims 1 and 2 have been rejected by the Examiner under 35 U.S.C. § 112, second paragraph, 35 U.S.C. § 102(b) and 35 U.S.C. § 103.

#### Rejection under 35 USC §112

The Examiner rejects Claim 2 under 35 USC §112, second paragraph, as being indefinite for failing to particularly point out and claim the subject matter which the applicant regards as the invention. Specifically in Claim 2, the limitation "wherein the alloy element of the platinum alloy is any of ruthenium...or manganese." The Examiner objects to the language "any of".

Claim 2 has been amended above to form a proper Markush group thereby removing the "any of" language. Given the above amendment, we hereby respectfully request that this objection be withdrawn.

The Examiner rejects Claims 1 and 2 under 35 USC §112, second paragraph as being indefinite for failing to particularly point out and claim the subject matter which the

applicant regards as the invention. Specifically, the Examiner language is not consistent in Claims 1 and 2.

Claims 1 and 2 have been amended to standardize the language between the claims. Given the above amendment, we hereby respectfully request that this objection be withdrawn.

#### **Rejection under 35 USC §102**

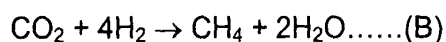
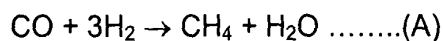
Examiner rejects Claims 1 and 2 under 35 USC §102(b) as being anticipated by Fleming et al., US Patent No. 3,884,838 (hereinafter 'the Fleming reference').

First, Fleming et al. discloses a catalyst composition useful for reacting carbon monoxide and/or carbon dioxide with hydrogen gas to form methane ( $\text{CH}_4$ ), which catalyst compositions comprises: ruthenium containing 0-50 weight percent platinum; and 5-20 weight percent reduced amorphous tungsten oxide.

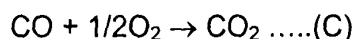
Additionally, Fleming's catalyst is added to methane, and not a selectively oxidizing catalyst for oxidizing reformed gas as in the present invention. Additionally, the catalyst in the present invention does **not** contain reduced amorphous tungsten oxide which is an essential composition to the Fleming's catalyst.

A selectively oxidizing catalyst for oxidizing reformed gas, as in the present invention, converts CO into  $\text{CO}_2$  without oxidizing hydrogen contained in fuel gas for a fuel cell. More specifically, the present catalyst does not act to produce methane but to convert CO into  $\text{CO}_2$  without oxidizing hydrogen contained in fuel gas for a fuel cell.

Second, Fleming's catalyst is a methanation catalyst which promotes reduction by fuel hydrogen as formulated below (A)(B).



By contrast, the present catalyst is a selectively oxidizing catalyst using externally-added  $\text{O}_2$ , for promoting oxidizing reaction as formulated below (C).



Since in the Fleming's catalyst the methane ( $\text{CH}_4$ ) produced with the use of fuel hydrogen cannot be used at all for the reaction of a fuel cell, all the hydrogen consumed for the above reactions (A) and (B) will be a loss of fuel availability. The catalyst thereby wastes a quantity of hydrogen.

The present catalyst uses a stoichiometric Quantity of  $\text{O}_2$  to selectively oxidize CO only in a reformed gas where hydrogen and CO coexist. Thus, there is no waste of hydrogen by the (A) reaction when fuel cell reaction is initiated. Further, the  $\text{CO}_2$  originally present in the reformed gas has nothing to do with reaction.

Thus, the Applicant disagrees with the Examiner's position that the present invention is anticipated by Fleming et al. which has a completely different use. We hereby respectfully request that this objection be withdrawn.

**Rejections under 35 USC §103(a)**

The Examiner rejects Claims 1 and 2 under 35 USC 103(a) as unpatentable over JP 7-256112 in view of Database of Zeolite Structures. JP-7-256112 discloses catalyst

composition comprising a metal from a group including ruthenium and platinum and a zeolite support structure. Database of Zeolite structures adds the specific name of mordenite to match the zeolite characteristics described in JP 7-256112.

We respectfully disagree with the examiners rejection.

In the JP7-256112 filed by the present Applicant as a senior application, there is no disclosure that the zeolite carrier is mordenite, as the Examiner states in the action letter. Therefore, it is impossible to determine that use of mordenite obvious, by relying upon JP7-256112 only.

The Examiner is correct in stating that Database of Zeolite Structures teaches mordenite has an aperture size of 0.75 nm.

The technological characteristics lies in that mordenite and platinum alloy have been employed as a carrier and catalyst composition, respectively and the amount of alloy element has been set to 20-50 atomic %, and therefore efficient conversion of only CO into CO<sub>2</sub> without causing loss of hydrogen gas present in the reformed gas has been made possible for the first time.

No loss of hydrogen gas present in the reformed gas has been an issue to be overcome for making fuel cell vehicle into practical use.

Thus, it is apparent to say the conventional catalytic technology failed to produce a satisfactory level of catalyst. So, it is not reasonable for the Examiner to deny the inventive step by saying the present invention is merely a combination of conventional technologies. We do not believe the combinations of the present catalyst composition with the carrier to be used with the catalyst is anticipated by one skilled in the art. As

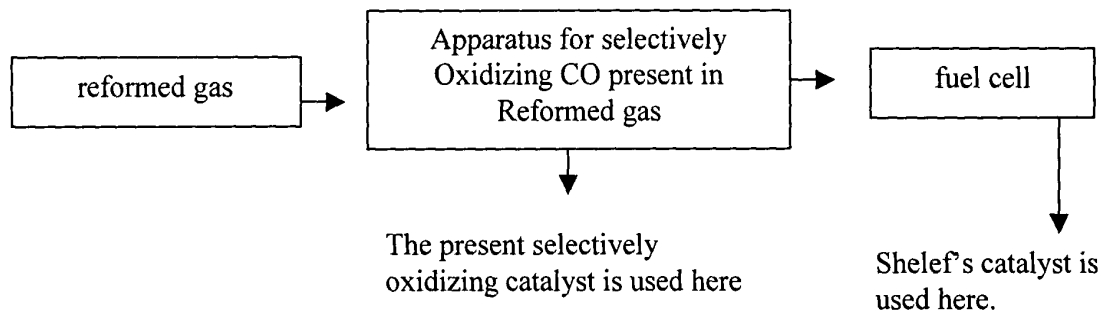
indicated in the specification our results are surprisingly and unexpectedly better than that produced by the prior art.

Thus, the Applicant disagrees with the Examiner's position that the present invention is obvious in light of JP7-256112 in light of the database of zeolite structures which did not produce results as favorable as those outlined in the present specification.

Examiner rejects claims 1 and 2 under 35 U.S.C. § 103(a) as being unpatentable over Shelef (U.S. Patent 6,117,581).

Shelef discloses an electrode comprising a conductive zeolite support material. The catalyst present in the electrode of Shelef is a gas-decomposing catalyst for generating power in a fuel cell, which is completely different from that of the present invention both in the stage and objective. On the other hand, the present catalyst acts to remove CO in reformed gas which is still present outside an fuel cell.

The flow chart below briefly explains differences between the two processes.

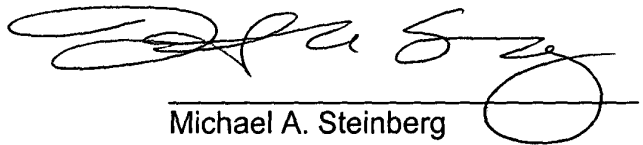


As demonstrated, the purpose and activity of the present catalyst is different from Shelef patent. It would not have been obvious to use the catalyst system of Shelef which has a different function and a different purpose. Given this demonstration, we respectfully request removal of this objection.

Applicants respectfully submit that this application is in condition for allowance and such action is earnestly solicited. If the Examiner believes that anything further is desirable in order to place this application in even better condition for allowance, the Examiner is invited to contact Applicants' undersigned representative at the telephone number listed below to schedule a personal or telephone interview to discuss any remaining issues.

Please charge any fee deficiency or credit any overpayment to Deposit Account No. 01-2300.

Respectfully submitted,



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